

IN THE CLAIMS:

1. (Currently Amended) A display unit having a coherent light scanning system for scanning coherent light, and projecting the coherent light onto a screen ~~using the coherent light scanning system~~, said coherent light scanning system comprising:

a coherent light generator for receiving a coherent light generation signal and for outputting coherent light;

a polygon mirror for receiving the coherent light from the coherent light generator and for reflecting the coherent light so that scanning to be projected on the screen is carried out by its rotation; and

an optical path formation part for forming an optical path of the coherent light to reach receiving the coherent light from the polygon mirror and transmitting the coherent light onto the screen, such that each so that plural scanings are carried out on the screen by the coherent light that is reflected at one reflection plane of the polygon mirror corresponds to multiple scans of coherent light on the screen; and said optical path formation part changing and at least one change in a scanning direction due to of the coherent light on the screen during each rotation of the polygon mirror,

wherein the scanning direction of coherent light on the screen changes corresponding to an angle of the polygon mirror relative to the coherent light received at the polygon mirror, and

the coherent light generator signal corresponds to a string of data, the string of data being read in a first direction corresponding to a first scan direction of coherent light on the screen, and being read in a reverse direction corresponding to a second scan direction of coherent light on the

~~screen which direction is determined in accordance with a rotation direction of the polygon mirror, and inverting the video signal at the changing.~~

2. Cancelled.

3. (Currently Amended) A display unit as defined in Claim 2 wherein said optical path formation part comprises a at least one reflection mirror ~~which is disposed on a path of reflected light from the polygon mirror, and reflects~~ for reflecting the coherent light from the polygon mirror.

4. (Currently Amended) A display unit as defined in Claim 3 wherein said reflection mirror ~~is disposed in a position at which the reflection mirror reflects~~ is for reflecting the coherent light from the polygon mirror while the rotation angle of the polygon mirror is within a predetermined range.

5. (Currently Amended) A display unit as defined in Claim 4 wherein the optical path formation part comprises a plurality of said reflection mirrors ~~are disposed~~.

6. (Currently Amended) A display unit as defined in Claim 5 wherein
said plural reflection mirrors are two mirrors ~~which are disposed with~~ , each having a
reflection surfaces ~~thereof being opposed to each~~ surface opposite the other; and

said two reflection mirrors are ~~disposed~~ located so that the coherent light from a single reflection surface of the polygon mirror is reflected off of each of the reflection surfaces ~~reflected at each~~ of the two reflection mirrors and ~~the coherent light that~~ passes through a space between the two reflection mirrors, respectively, and

each of (1) the coherent light reflected from each of the reflection surfaces of the two reflection mirrors, and (2) the coherent light that passes between the two reflection mirrors, generates a scan the same range on the screen, and each of the scans has substantially the same width on the screen.

7. (Original) A display unit as defined in Claim 6 wherein said reflection mirrors multiple-reflect the coherent light.

8. (Currently Amended) A display unit as defined in Claim 6 wherein said two reflection mirrors are ~~disposed rotatably~~ rotatable about an axis that is perpendicular to the scanning direction of the coherent light.

9. (Withdrawn) A display unit as defined in Claim 1 wherein said optical path formation part has a high-speed deflector for deflecting a single beam of coherent light applied to one reflection plane of the polygon mirror to generate plural beams, and outputting the plural beams to the polygon mirror.

10. (Withdrawn) A display unit as defined in Claim 9 wherein said high-speed deflector comprises an EO (Electro Optical) deflection device.
11. (Withdrawn) A display unit as defined in Claim 9 wherein said high-speed deflector deflects the coherent light along the direction that is approximately perpendicular to the scanning direction of the polygon mirror.
12. (Withdrawn) A display unit as defined in Claim 1 wherein said optical path formation part includes a free-form surface mirror which is disposed on a path of reflected light from the polygon mirror, and has at least one reflection plane of free-form surface shape.
13. (Withdrawn) A display unit as defined in Claim 12 wherein said free-form surface mirror has two or more reflection planes.
14. (Withdrawn) A display unit as defined in Claim 13 wherein said reflection planes include first and third reflection planes of free-form surface shapes, and a second reflection plane of planar shape, which is sandwiched between the first and third reflection planes.
15. (Withdrawn) A display unit as defined in Claim 14 wherein said first to third reflection planes are shaped such that the respective coherent light beams applied to the first to third reflection planes scan the same range on the screen.

16. (Withdrawn) A display unit having a coherent light scanning system for scanning coherent light, and projecting the coherent light onto a screen using the coherent light scanning system, wherein

said coherent light scanning system comprises:

a polygon mirror for scanning the coherent light toward its rotation direction, and
an optical path formation part for increasing the scanning line number of the coherent light; and

said optical path formation unit comprises:

a high-speed deflector for deflecting a single beam of coherent light to generate plural beams, and outputting the plural beams to the polygon mirror, and

a reflection mirror which is disposed on a path of reflected light from the polygon mirror, and reflects the plural coherent lights from the polygon mirror.

17. (Withdrawn) A display unit having a coherent light scanning system for scanning coherent light, and projecting the coherent light onto a screen using the coherent light scanning system, wherein

said scanning system comprises:

a polygon mirror for scanning the coherent light toward its rotation direction, and
an optical path formation part for increasing the scanning line number of the coherent light; and

said optical path formation part comprises:

a high-speed deflector for deflecting a single beam of coherent light to generate plural beams, and outputting the plural beams to the polygon mirror, and

a free-form surface mirror which is disposed on a path of reflected light from the polygon mirror, and includes at least one reflection plane of free-form surface shape.

18. (Currently Amended) A coherent light scanning method for performing scanning with coherent light on a screen, comprising:

generating coherent light;

reflecting the coherent light from a polygon mirror;

rotating a the polygon mirror which reflects the coherent light, so that scanning is carried out to generate a scan on the screen by the coherent light reflected at from the polygon mirror; and

forming manipulating an optical path of the coherent light from the polygon mirror to reach the screen so that plural scanings are carried out on the screen by the coherent light reflected at one each reflection plane of the polygon mirror corresponds to a plurality of scans on the screen, the scans moving in a plurality of directions across the screen.

19. (Currently Amended) A coherent light scanning method ~~for performing scanning with coherent light on a screen, comprising:~~ according to claim 18, wherein

~~rotating a polygon mirror which reflects the coherent light, so that scanning is carried out on the screen by the coherent light reflected at the polygon mirror; and~~

~~reflecting the coherent light that is reflected at one reflection plane of the polygon mirror~~
by at least one mirror which is ~~disposed~~ located on a the optical path of reflected light from the
polygon mirror to ~~reach the screen so that plural scanings are carried out on the screen by the~~
coherent lights, for manipulating the optical path of the coherent light from the polygon mirror.

20. (Withdrawn) A coherent light scanning method for performing scanning with coherent light on a screen, comprising:

deflecting a single coherent light in a direction that is approximately perpendicular to the scanning direction of a polygon mirror, thereby to generate plural beams; and

rotating the polygon mirror that reflects the plural coherent lights so that plural scanings are carried out on the screen by the plural coherent lights reflected at the polygon mirror.

21. (Withdrawn) A coherent light scanning method for performing scanning with coherent light on a screen, comprising:

rotating a polygon mirror that reflects the coherent light, so that scanning is carried out on the screen by the coherent light reflected at the polygon mirror; and

reflecting the coherent light that is reflected at one reflection plane of the polygon mirror, so that plural scanings are carried out on the screen by the coherent light, by a free-form surface mirror having a free-form surface shape, which is disposed on a path of reflected light from the polygon mirror to reach the screen.